

### **REMARKS**

The Office Action of October 6, 2004 has been reviewed and the Examiner's comments carefully considered. The present Amendment cancels all of pending claims 11-21 and adds new claims 76-99 in accordance with the originally-filed specification. No new matter has been added. Claims 76, 83, 85, 87, 89 and 91 are in independent form.

Attached for the Examiner's convenience is a chart which indicates what the new claim number is and its dependency, as well as the limitations that exist in each claim with respect to the old claim set. This chart provides the Examiner with a roadmap as to how the new claim set compares to the old claim set.

The Examiner has indicated that the subject matter of claims 16-21 defines over the prior art of record. In particular, the Examiner indicates that all of claims 16-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. For the Examiner's information, all of claims 76-99 incorporate this allowable subject matter in the form of new independent and dependent claims. Therefore, the Examiner's claim objections with respect to the "old" claim numbers will be addressed here. The wording of claim 14 has been modified to include the phrase "comprises" where appropriate. In addition, the term "crystal" has been removed from the wording of claim 14, and the term "material" inserted therefor. Still further, the term "transparent" has been removed from the wording of claim 15. The above-discussed modifications to claim 14 cure the deficiencies in claims 19-21. Therefore, claims 14 and 15 have been amended to overcome the Examiner's objections to claims 14, 15 and 19-21. Withdrawal of the Examiner's objections to these claims is respectfully requested.

The subject matter of old claim 13 has also been modified when inserted into the

new claim set. In particular, old claim 13 recited a filter that filters out radiation having wavelengths above those in the desired spectral region. As a matter of clarity, and as supported in the specification, the filter permits a pass band in a desired spectral region. Incidentally, this filter filters out radiation having wavelengths outside of those in the desired spectral region. The use of the term “above” is inadvertent and does not adequately describe the function of the filter. Therefore, the term “above” has been replaced with the phrase “outside of” to more adequately describe the function of the filter.

With respect to the previously-pending claim set, claims 11-15 stood rejected. Specifically, claims 11-13 stood rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,837,054 to Singh et al. (hereinafter “the Singh patent”). Further, claims 14 and 15 stood rejected under 35 U.S.C. § 103(a) as being obvious over the Singh patent in view of U.S. Patent No. 5,204,773 to Guida. In view of the foregoing amendments and the following remarks, withdrawal of these rejections is respectfully requested.

New independent claim 76 is directed to a UV detection system including an optical system capable of focusing instant radiation, a UV crystal filter having a pass band in a desired spectral region and positioned to receive focused incident radiation from the optical system, and a radiation detection system sensitive to radiation in at least the pass band of the UV crystal filter, where the radiation detection system is positioned to receive radiation transmitted through the UV crystal filter. The optical system includes filters that filter out radiation having wavelengths above those in the desired spectral region. The UV crystal filter includes a host material that is transparent within at least the desired spectral region, and at least one dopant incorporated within the host material. The dopant provides optical absorption bands, such that the crystalline filter has the pass band within the desired spectral region. The host material is

chosen from the group consisting of  $\text{MgF}_2$ ,  $\text{SrF}_2$ ,  $\text{BaF}_2$ ,  $\text{ZnF}_2$ , and  $\text{CdF}_2$ . Further, the dopant includes a fluoride compound dopant. In short, independent claim 76 includes the limitations of old claims 11, 13, 14, 15 and 16. The Examiner has indicated that the subject matter of this claim constitutes allowable subject matter and defines over the prior art of record.

Independent claim 83 incorporates all of the limitations of old claims 11, 13 and 14. In addition, independent claim 83 includes a filter, where the host material is  $\text{CaF}_2$  and the at least one dopant includes  $\text{CeF}_3$  and  $\text{CeN}$ . This is a limitation found in old claim 19. Again, the Examiner has already indicated that the subject matter of claim 19, including the subject matter of the base claim and any intervening claims, constitutes allowable subject matter.

New independent claim 85 is identical to new independent claim 83, except that the limitations of old claim 19 are substituted with the limitations of old claim 20. The Examiner has indicated that the subject matter of claim 20 defines over the prior art of record and constitutes allowable subject matter.

Similarly, new claim 87 incorporates the limitations of old claims 11, 13 and 14, but substitutes the subject matter of old claim 21 for the subject matter of old claim 19. Again, the Examiner has indicated that the limitations in claim 21 define over the prior art of record and constitute allowable subject matter.

New independent claim 89 includes the limitations of old claims 11, 13 and 14. However, instead of using  $\text{CeC}_2$  as a dopant, as in old claim 21, claim 89 substitutes  $\text{CeO}_2$  therefor. Accordingly, new independent claim 89 is virtually identical to new independent claim 87, except for the change in one of the dopants. This dopant substitution has full support in the specification and does not constitute new matter. Therefore, the limitations in new independent claim 89 are believed to define allowable subject matter.

Finally, new independent claim 91 includes limitations of old claims 11, 13 and 14. In addition, the limitations of old claim 15 are included, except that the host material including  $\text{MgF}_2$  and  $\text{CaF}_2$  have been eliminated from the list. The Examiner uses the Singh patent in combination with the Guida patent to reject old claim 15, which included these materials as host materials. Therefore, Applicant has removed  $\text{MgF}_2$  and  $\text{CaF}_2$  from the list, leaving  $\text{SrF}_2$ ,  $\text{BaF}_2$ ,  $\text{ZnF}_2$  and  $\text{CdF}_2$  in the list. None of these remaining four compounds are found in the prior art of record. Accordingly, neither the Singh patent nor the Guida patent, whether used alone or in combination, teaches or suggests a filter that includes the limitations of claims 11, 13 and 14, and where the host material is chosen from the group consisting of  $\text{SrF}_2$ ,  $\text{BaF}_2$ ,  $\text{ZnF}_2$  and  $\text{CdF}_2$ . Accordingly, Applicant submits that new independent claim 91 defines over the prior art of record and is in condition for allowance.

For the foregoing reasons, independent claims 76, 83, 85, 87, 89 and 91 are not anticipated by or rendered obvious over the Singh patent, the Guida patent or any of the remaining prior art of record, whether used alone or in combination. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner that would render the invention, as claimed, obvious. Accordingly, allowance of independent claims 76, 83, 85, 87, 89 and 91 is respectfully requested.

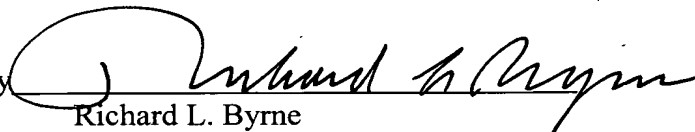
Claims 77-82 depend directly from new independent claim 76 and are allowable for the reasons discussed hereinabove in connection with independent claim 76. Claim 84 depends directly from and adds further limitations to new independent claim 83 and is believed to be allowable for the reasons discussed hereinabove in connection with new independent claim 83. Claim 86 depends directly from and adds further limitations to new independent claim 85 and is believed to be allowable for the reasons discussed hereinabove in connection with new

independent claim 85. Claim 88 depends directly from and adds further limitations to new independent claim 87 and is believed to be allowable for the reasons discussed hereinabove in connection with new independent claim 87. Claim 90 depends directly from and adds further limitations to new independent claim 89 and is believed to be allowable for the reasons discussed hereinabove in connection with new independent claim 89. Finally, claims 92-99 depend either directly or indirectly from and add further limitations to new independent claim 91 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 91. Therefore, for all the above reasons, all of claims 77-82, 84, 86, 88, 90 and 92-99 are believed to be in allowable form.

For all the foregoing reasons, Applicant believes that new claims 76-99 are patentable over the cited prior art and in condition for allowance. Reconsideration of the rejections and allowance of all pending claims 76-99 are respectfully requested.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON  
ORKIN & HANSON, P.C.

By 

Richard L. Byrne  
Registration No. 28,498  
Attorney for Applicant  
700 Koppers Building  
436 Seventh Avenue  
Pittsburgh, PA 15219-1818  
Telephone: (412) 471-8815  
Facsimile: (412) 471-4094  
E-mail: [webblaw@webblaw.com](mailto:webblaw@webblaw.com)

Application No. 10/620,930  
 Paper Dated: February 7, 2005  
 In Reply to USPTO Correspondence of October 6, 2004  
 Attorney Docket No. 4364-032285

# ATTACHMENT

## NEW CLAIM CHART

| New Claim No. | Depends From: | Includes Limitations of Old Claim Nos.  |
|---------------|---------------|---|
| 76            | Independent   | 11 + 13 + 14 + 15 + 16  |
| 77            | 76            | 12  |
| 78            | 76            | 19  |
| 79            | 76            | 20  |
| 80            | 76            | 21  |
| 81            | 76            | 17  |
| 82            | 76            | 18  |
| 83            | Independent   | 11 + 13 + 14 + 19   |
| 84            | 83            | 12  |
| 85            | Independent   | 11 + 13 + 14 + 20   |
| 86            | 85            | 12  |
| 87            | Independent   | 11 + 13 + 14 + 21   |
| 88            | 87            | 12  |
| 89            | Independent   | 11 + 13 + 14 + (same as 21, but with CeO <sub>2</sub> )                                       |
| 90            | 89            | 12  |
| 91            | Independent   | 11 + 13 + 14 + (same as 15, but with MgF <sub>2</sub> and CaF <sub>2</sub> removed from list) |
| 92            | 91            | 16  |
| 93            | 92            | 17  |
| 94            | 92            | 18  |
| 95            | 91            | 12  |
| 96            | 91            | 13  |
| 97            | 91            | 19  |
| 98            | 91            | 20  |
| 99            | 91            | 21  |